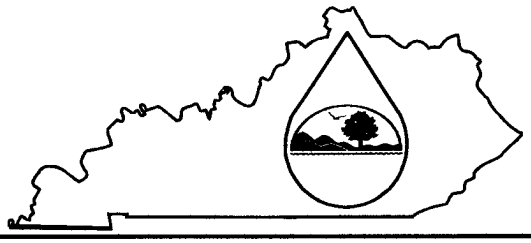
AI # 102915

KPDES FORM HQAA



Kentucky Pollutant Discharge Elimination System (KPDES)

High Quality Water Alternative Analysis

The Antidegradation Implementation Procedures outlined in 401 KAR 5:030, Section 1(3)(b)5 allows an applicant who does not accept the effluent limitations required by subparagraphs 2 and 3 of 5:030, Section 1(2)(b) to demonstrate to the satisfaction of the Environmental and Public Protection Cabinet that no technologically or economically feasible alternatives exist and that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the water is located. The approval of a POTW's regional facility plan pursuant to 401 KAR 5:006 shall demonstrate compliance with the alternatives analysis and socioeconomic demonstration for a regional facility. This demonstration shall also include this completed form and copies of any engineering reports, economic feasibility studies, or other supporting documentation

I. Permit Information

Facility Name:	Cambrian Coal Corporation	**KPDES NO.:**	898-0819
Address:	P.O. Box 100	**County:**	Pike
City, State, Zip Code:	Belcher, KY 41513	**Receiving Water Name:**	Unnamed Tributaries of Powell Creek & Powell Hollow of Harless Creek

II. Alternatives Analysis - For each alternative below, discuss what options were considered and state why these options were not considered feasible.

1. **Discharge to other treatment facilities.** Indicate which treatment works have been considered and provide the reasons why discharge to these works is not feasible.

The nearest municipal sewage treatment facility is at Elkhorn City which is approximately 3.7 away. This plant was not designed for or capable of effectively treating either the type or volume of water possible with this project. Influx of water from this project would likely overload this facility resulting in a by-pass which would lead to the discharge of untreated municipal wastes creating a serious public health treat.

Because of terrain, routing of water to this plant would require 79,728 feet (15.1 mile) of carrier line and extensive network of pump and lift stations and obtaining numerous right-of-ways and easements. Conservatively estimating line @$22/ft, a minimum of 2 lift stations per mile, a central collection system, ignoring other stated requirements, the minimum cost of this operation would greatly exceed $3 million dollars.

Transporting this volume of water by self-contained disposal trucks would also be excessively expensive and impractical. Based on a 25 year, 24 hour storm event calculation, the possible peak discharge from this project could exceed 336 mgpd. Rates quoted from Somerset Environmental in Somerset, KY indicated charges of $65/hour (gate to gate)/3,000 gallon pick-up of non-hazardous wastewater and a $0.49/gallon disposal fee.

2. **Use of other discharge locations.** Indicate what other discharge locations have been evaluated and the reasons why these locations are not feasible.

A discharge location in Powell Hollow was evaluated as alternate discharge locations for basin #2 but deemed unpractical. Fill #3 and ensuing silt structure is proposed for this site. The calculated additional volume of water would increase flow above allowable limits. To route water to either of these sites would require a central collection system, approximately 1500 feet of line, a minimum of 2 lift stations* and additional permit area and road construction. A conservative estimate for this option would exceed $400,000. Producing oil and gas wells in the area also deter this consideration.

Powell Creek was considered as a discharge location for basin #1 but would require a central collection system, more than 4000 feet of line, additional pump stations and additional right of entry. The cost of this option would exceed the cost of utilizing the unnamed tributary to Harless Creek site. Burnt Tree Hollow as also considered as an alternate discharge location but is unpractical. Additionally, due to population and increased traffic on public roads, a potential public safety risk exists.

Routing the discharge from both structures to Biggs Creek was considered as a disposal option but this would require the construction of a very large central collection, more than 6500 feet of line, a minimum of 3 lift stations and additional leases. Accumulating this large amount of water could prove both dangerous and impractical. This option's cost would exceed $650,000 and is deemed unviable. Gas lines limit the viability of this alternative.

Placement and design of current discharge locations were engineered to be the most effective and least invasive. Excavation, installation and involved construction for facilities required for alternate locations would create a greater environmental disturbance than the proposed discharge locations with the same end results of discharging into comparable quality water resources.

*Lift stations are site specific and vary greatly but are specific to topography and substrate composition:

***Table 1**
Pressure (LPS)

Pumping Stations (No. per mile by topography)	*Flat*	*Rolling*	*Steep*
200 gpm P.S. $54,000	0	0	2
100 gpm P.S. $43,200	0	1	2
Composite Cost	$0	$43,200	$194,400

Gravity

Pumping Stations (No. per mile by topography)	*Flat*	*Rolling*	*Steep*
200 gpm P.S. $54,000	1	0	2
100 gpm P.S. $43,200	2	1	2
Composite Cost	$140,400	$43,200	$194,400

A Mathematical Model For Estimating Sewer Costs"
by George A. Earle, III, P.E. and R. Paul Farrell Jr., P.E., Environment One Corporation

3. **Water reuse or recycle.** Provide information about opportunities for water reuse or recycle at this facility. If water reuse or recycle is not a feasible alternative at this facility, please indicate the reasons why.

The drainage area for this area is 163 acres resulting in a possible peak discharge of 252,243 gpm. In order to reuse or reycle this water, a central collection system would have to be constructed which would cost near $1 million dollars. This is economically impractical since the water cannot be used at this site.

*Drainage area for Sediment Structure No. 1 is approximately 65 acres.
Drainage area for Sediment Structure No. 2 is approximately 98 acres.

Using water from this project for on site dust suppression and watering of reclaimed areas was considered but because the land slope is greater than 6%, the absorption rate does not support broad land application.

There are no other facilities on site that will need a raw water source.

4. **Alternative process or treatment options.** Indicate what process or treatment options have been evaluated and provide the reasons they were not considered feasible.

As an alternative treatment option, sand filtration was evaluated but deemed not applicable. Sand filtration is used primarily as a pre-treatment to remove microbial contaminates, not particulate matter, in storm run-off in smaller, urban drainage areas. The high solids involved in a storm event could possibly clog the filtration unit rendering it ineffective. Sand filters do not control storm water flow and do not prevent downstream bank and channel erosions as proposed sediment structures are designed to do. Also, the operational effectiveness of these units in colder climates and freezing conditions are not yet know.

Using silt fences and straw bales for sediment control was considered as per BMP's but were determined to be inadequate due to the elevation, grade of the area, and drainage area size.

Other mining methods were considered. Mining methods are dictated by elevation, thickness of the seam and the amount of overburden covering the reserves. Surface extraction is the only feasible method to recover these coal seams.

Constructing an on-site storm water treatment facility was considered. The volume of discharge and the lift required make this an unfeasible option. Consultation with Beckman Environmental in Cincinnati, OH, a company that specializes in these types of constructions, revealed a recent bid on a project in Columbus, OH involving a lift of 30 feet, a peak discharge of 3800 gpm (compared with 233,333 gpm for this project), a grit removal station, and influent and effluent lines at $2.5 million dollars. Cost to construct a similar facility at this site would be much greater.

5. **On-site or subsurface disposal options.** Discuss the potential for on-site or subsurface disposal. If these options are not feasible, then please indicate the reasons why.

On site disposal was considered as a disposal option. The construction of an on-site wastewater treatment type plant would require a facility engineered to handle over 233,333 gpm during a 24 hour, 25 year storm event.* Construction cost for package plants are engineered to specific location, load and other conditions but with a required collection system would be expected to exceed $1 million dollars. These plants require a continual power source, daily maintenance, periodic repair and leave a large footprint. After completion of this project, the plant would either have to be removed or abandoned to unsightly, dangerous rubbish.

**The Rational equation is the simplest method to determine peak discharge from drainage basin runoff. It is not as sophisticated as the SCS TR-55 method, but is the most common method used for sizing sewer systems.*

The installation of a sanitary septic system, i.e., septic tank was evaluated but is not an applicable option. Building a system **large enough** to handle the **volume of water** would be impractical. Septic systems are design to degrade organic waste and biodegradable material over time by anaerobic digestion. While the source water would most likely contribute some organic material and some needed bacteria, this would be inadequate to decompose the sediment and would work essentially the same as a sediment structure.

Old underground works in the area were considered as a subsurface disposal option but were deemed as potentially dangerous due to the uncertainty of the condition of the remaining structures. The possibility exists that pumping water into these works could cause a "blow-out" or leakage leading to both a public safety and environmental threat.

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6. **Evaluation of any other alternatives to lowering water quality.** Describe any other alternatives that were evaluated and provide the reasons why these alternatives were not feasible.

Choosing not to mine this area as an alternate to lowering water quality was evaluated but the loss of the 50 direct jobs and the resulting $2.5 million dollars in approximate collective annual salaries, the loss of as many as 150 indirect jobs as well as loss of revenues including severance tax estimated at $1 million dollars would have severe negative economic consequences.

Accepting the more stringent discharge limitations was considered but because this would require more aggressive chemical treatment, the real potential for an environmental or personnel accident exist. The costs are extreme and it was dismissed. Based on information from OSMRE, the cost for chemical treatment of a mildly acidic mine drainage with an average flow of 100 gpm using caustic soda was $94,784. With a possible flow of over 363 mgpd during a rainfall event, the cost of this option would make the cost of this option completely prohibitive.

III. Socioeconomic Demonstration

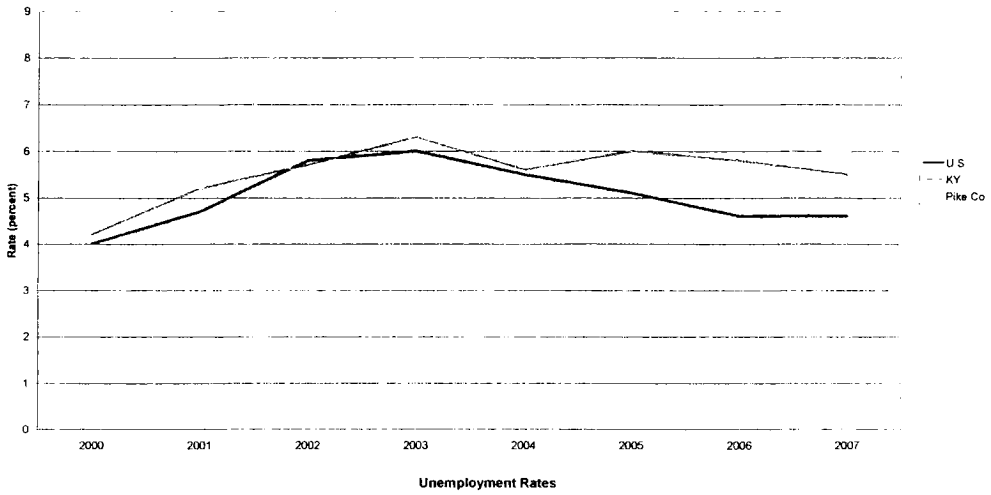
1. State the positive and beneficial effects of this facility on the existing environment or a public health problem.

Much of the watershed to be impacted by this project is of a poor nature due to extensive, previous mining, logging and gas lines in the area. Once mitigation begins, the stream banks will be stabilized to prevent erosion, species indigenous to the area will be planted to establish an adequate riparian zone and stream channels will be rehabilitated to curb sedimentation. This will lead to a healthier habitat for aquatic species as well as other wildlife. Reclamation plans call for development of a fish and wildlife habitat. This will provide an area that is ecologically functional was well as aesthetically pleasing.

2. Describe this facility's effect on the employment of the area

The small community of Millard historically has an unemployment rate significantly higher than state and national averages. This project will continue the employment of 50 people of which 95% are local residents. Economic impact studies suggest that the mining industry creates 3 indirect, directly related jobs for every actual direct mining position.* Based on this data, this project will support 200 total jobs. This project will aid in maintaining employment in an area which is very dependent on the coal industry for its employment and economic health.

*Source: University of Kentucky Center for Business and Economic Research: Economic Impact Analysis of Coal in Kentucky, *(1995-2004) by Haywood and Baldwin*



3. Describe how this facility will increase or avoid the decrease of area employment.

Unemployment data for September 2008*, indicated that there were 1,551 people in Pike County currently unemployed and seeking employment.

By maintaining 50 existing jobs, this facility will avoid a decrease of the area's employment and also provide indirect employment for as many as 150 others providing needed jobs for this area. This is significant for Millard due to the fact that the community is small and the primary jobs available in the area are generated from mining operations. This added area will assure that these jobs are continued. A decrease in mining activities in the area would produce the detrimental effect of more unemployed residents leading the area to economic distress. Although in a current upswing, the mining industry had experienced an almost 30% decrease in employment preceding 2005. These jobs help to decrease that trend.

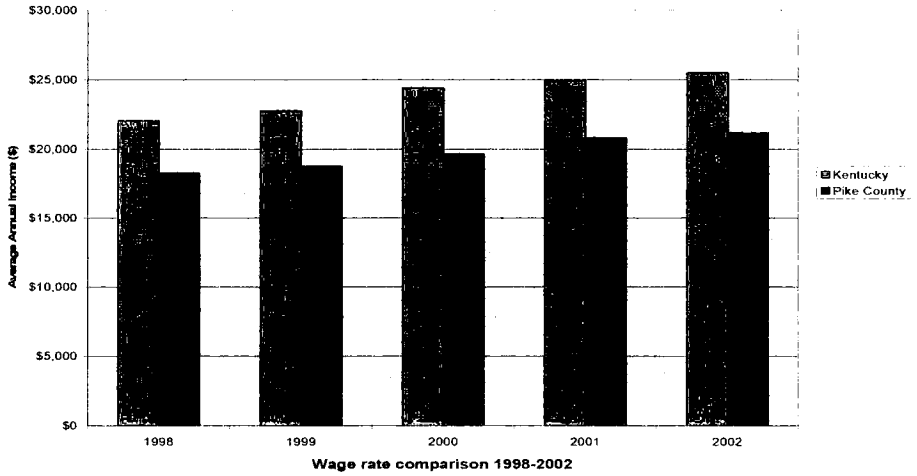
*Workforce Kentucky

4. Describe the industrial or commercial benefits to the community, including the creation of jobs, the raising of additional revenues, the creation of new or additional tax bases.

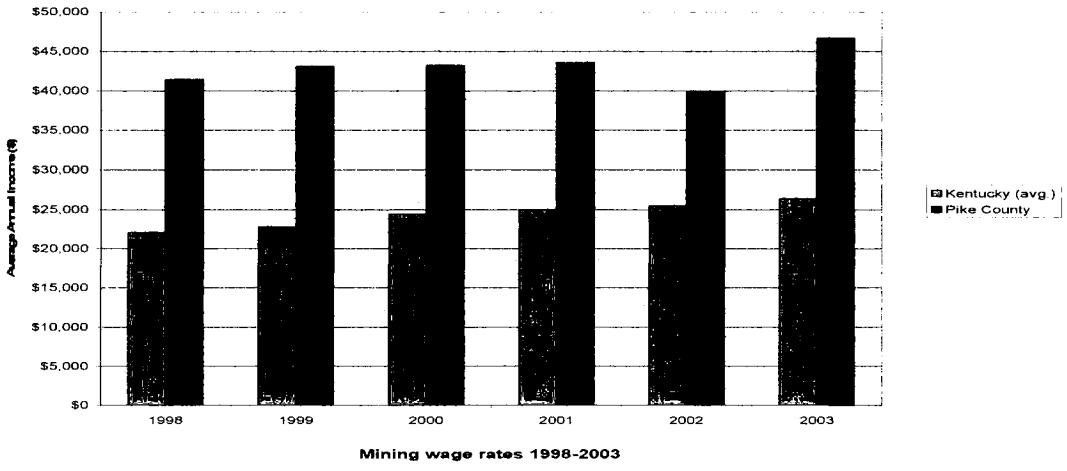
In addition to 50 direct jobs provided by this project, it will also provide for more employment indirectly in mining service jobs. These jobs include equipment sales, mining engineering consultants, food service, fuel sales, transportation, coal washing and blending. The mining industry directly contributes to Pike County's economy through real taxes, personal property taxes and the state severance tax. The severance tax rate for coal is 4.5% of which 50% is slated to be returned to the county of origin. From 1993 thru 2002, Pike County received $27,834,308 in severance taxes which have been used for local education, health services, judicial services and infrastructure project. This project will contribute close to $1 million dollars to this tax base and help provide more funding for county improvements.

5. Describe any other economic or social benefits to the community.

The jobs that this project provides pay some of the highest wages in the Pike County. The maintenance of these jobs will have a positive significant impact on the community's economy. Comparing the average income of a Pike county resident with that of other Kentucky residents, Pike county residents earn on the average $5,000 less per year:



During the same period, a Pike County coal miner earned almost double that of the average Kentucky worker:



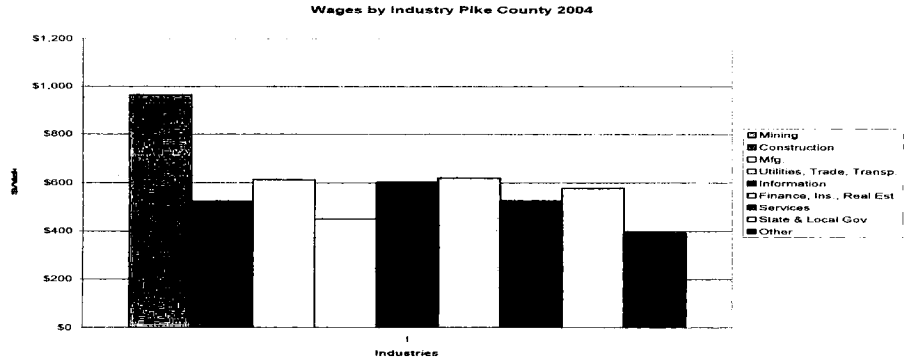
III. Socioeconomic Demonstration - continued

	Yes	No
6. Will this project be likely to change median household income in the county?	☒	☐
7. Will this project likely change the market value of taxable property in the county?	☒	☐
8. Will this project increase or decrease revenues in the county?	☒	☐
9. Will any public buildings be affected by this system?	☐	☒

10. How many households will be *economically* or *socially* impacted by this project? **200+**

11. How will those households be *economically* or *socially* impacted? (For example, through creation of jobs, educational opportunities, or other social or economic benefits.)

The average weekly earnings for a mining employee in Pike County in 2004 was $970.45*. These earnings accounted for 28.3% of the total county wages for that time period. The income realized from the direct jobs provided by this project will near $50,000 year/household or approximately $2.5 million/year collectively. Currently Kentucky ranks 44th nationally in per capital income. The jobs provided by this project allow these households to earn more than most other occupations in Pike county including construction, manufacturing, utilities and real estate:



Data for U.S. Census indicates that in 2005, nearly 23.7% of Pike county residents were living below the poverty level. In 2000, only 9.4% of Pike County residents held a bachelors or higher degree compared with 17.1% of other Kentuckians. These earnings will help these households to maintain or improve their current economic status and provide opportunities for gains in social welfare only realized from enhanced income. Severance tax dollars fund basic needs such as water and sewer projects but also fund recreational, social and cultural developments as well.

**Ky Coal Facts/Wages by County*

	Yes	No
12. Does this project replace any other methods of sewage treatment to existing facilities? (If so describe how)	☐	☒

This area has historically been marked by straight line residential discharges which are gradually being replaced by septic tanks. There is no treatment taking place in the project boundary.

	Yes	No
13. Does this project treat any existing sources of pollution more effectively? (If so describe how.)	☒	☐

There is an old prelaw fill area and a prelaw deep mine face-up that has been backfilled. These two areas, totaling 7 acres will be rehabilitated. Sediment control from these areas will be improved. Existing over growth will be removed and channelization of receiving stream due to excessive silting will be improved. Prior to the state of this project, the mine site will be cleaned and all garbage material will be disposed of. Several gas wells and access roads exist with the project area that currently lack any form of sediment control. Implementation of this project will include proper grading and drainage to improve this.

III. Socioeconomic Demonstration - continued

	Yes	No
14. Does this project eliminate any other sources of discharge or pollutants? (If so describe how.)	☒	☐

This project will involve reclaiming old mine sites which are contributing to erosion and sedimentation in the area. It will also improve sediment control from run-off resulting from existing gas wells and previous logging in the permit area. Reclamation for the area, including approximately 10 acres of existing disturbances, will include initial seeding for ground control and later selected native planting to establish a functional fish and wildlife habitat.

15. How will the increase in production levels positively affect the socioeconomic condition of the area?

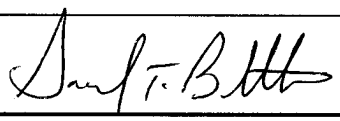
This project will remove approximately 1million tons of coal that would not have been recovered or made available to the market otherwise. This will result in continued employment for approximately 200 people, aid in development and maintenance of indirect jobs and will increase the amount of money the area receives in personal and severance taxes. Pike county should see the return of over $1 million dollars in severance tax dollars from this project alone.

16. How will the increase in operational efficiency positively affect the socioeconomic condition of the area?

Surface extraction provides the only economical means to recover these coal reserves. This mining method will allow more economical operational efficiency by allowing reclamation to be contiguous with the excavation process. This will be more aesthetic as the post land development of fish and wildlife habitat can be expedited.

. The increase in operational efficiency will in turn increase the production levels leading to increased employment opportunities in the area, maintenance of existing employment, development and maintenance of indirect jobs and increase in the amount of monies received from coal sales. In Pike county, severance tax dollars have been used for industrial site development, water and sewer line expansions, recreational facilities, senior citizens' centers, fire stations and charitable organizations. These expenditures increase the overall quality of life of the area for area residents. This project will contribute over $1 million dollars to these funds.

IV Certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and Title:	**Samuel T. Billiter, Manager of Engineering**	**Telephone No.:**	(606)754-5010
Signature:		**Date:**	**10/23/08**